COMPATIBLE LINEAR AND BRANCHED ETHYLENIC POLYMERS AND FOAMS THEREFROM

ABSTRACT

An expanded cellular ethylenic polymer product is provided from an irradiated, noncross-linked linear ethylenic polymer. Linear ethylenic polymers can be irradiated at ambient conditions sufficient to introduce branching in the polymer in the absence of detectable cross-linking as indicated by the absence of gels. The irradiated linear ethylenic polymer is compatible with highly branched low density polyethylene and, when mixed therewith, produces a resin having a single broad based melting temperature range as determined by direct scanning calorimetry, which indicates that the polymers in the mixture have similar crystallization behavior suitable for producing low density foams by extrusion foaming. The linear polymers can be obtained from recycled shrink wrap film. Low densities of from 0.7 to less than 4 pcf can be achieved. The foams typically have improved tear resistance as compared to previous products prepared from low density polyethylene, at comparable low densities.